

UNITERM/80
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U N I T E R M / 8 0

The NEWDOS/80 Terminal Program
For TRS-80 Model I & Model III
Copyright 1981

by:

Pete Roberts

User's Manual
Copyright 1981

by:

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TOM

To our wives, Peggy and Connie;

Your Saint-like patience is the only reason this project was completed.

Our Love,
Tom & Pete
August 1981

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INTRODUCTION

UNITERM/80 represents a new concept in software for the TRS-80 Microcomputers. With the introduction of the TRS-80 Model III, many users were faced with the dilemma of no reliable software that would operate properly with both the Model I and Model III. In addition, modems for the two computers were not made to any standard. This confusion of computers and modems made it necessary to have as many as four different terminal programs to work with the various combinations. UNITERM/80 has solved this problem by allowing the user to place the program in the computer, and have UNITERM/80 search out the necessary information and configure itself to the machine and modem!

UNITERM/80 has a wealth of special features, but rather than list them here, we recommend that you read this manual carefully and entirely. As with any quality software, it is necessary to learn the system to become proficient with its features. This is accomplished through reading the manual and actual 'hands on' practice with the system.

This manual was prepared with the novice user in mind, but you may find terms that confuse you, or that you are not familiar with. In the back of the manual you will find a GLOSSARY of terms. Please refer to it if you do not understand a term used in the manual.

SYSTEM REQUIREMENTS

UNITERM/80 will operate on a TRS-80 Model I or Model III under NEWDOS/80 with a minimum of one disk drive and 32K of memory. A serial interface of some type is also required. This can be one of a number of different types. See the Special Instructions sections for details on the different interfaces supported by UNITERM/80.

GETTING SET UP

UNITERM/80 is supplied on a single density formatted disk with a special Boot Loader to allow you to transfer the programs from the Master Disk to the Operating System of your choice, even in a one drive system configuration on the Model I. On Model III systems, use the PDRIVE table on NEWDOS/80 2.0.

The PDRIVE configuration is as follows:

TI=A TD=A TC=35 SPT=10 TSR=3 GPL=2 DDSL=17 DDGA=2

UNITERM/80 consists of one program and 5 small overlays. The use of these modules is described in APPENDIX V. Also included are two tables, 'TABLE1/TAB' and 'TABLE2/TAB'. All the modules may be left on your operating disk, but if you have no use for certain overlays, then you may delete them from your operational disk as described in APPENDIX III. After UNITERM/80 and its modules are on your system disk (DOS), you are ready to start UNITERM/80. Type 'UNI80' from Dos Ready and the program will start automatically. A copyright notice will be displayed while modules are loading. UNITERM/80 will check key locations in your computer and determine if it is a Model I or a Model III and load in the proper system overlays to control all of the functions including upper & lower case if present. UNITERM/80 will now check for a serial interface, and if it does not find one, it will advise you of the condition. If no RS-232C interface, LYNX Modem, CHATTERBOX modem, or MicroCONNECTION Modem is found the question 'PORT ADDRESS OF MODEM (LOWEST OF THE FOUR)' will be asked. At this point assure that the LYNX (Model III) or CHATTERBOX Modem (Model I) is in place and powered up, and then answer the question followed by (ENTER) (even if it is 232). UNITERM/80 will check again and repeat the question until it finds the modem where you say it is.

The system will also look for a file called PATCH80/SYS and will load it if present. This file is the latest patches and enhancements to the system and will be described in detail in APPENDIX IV of this manual. At this point UNITERM/80 is ready to be connected to another computer either directly or by modem. The serial parameters are set for: 300 BAUD, 7 BIT WORD, 1 STOP BIT, EVEN PARITY. If you want different parameters see COMMANDS M & I.

To use all the power of UNITERM/80, it is necessary to use the *COMMAND MODE* and 'SPECIAL FEATURES'. Ease of operation will be obtained through the use of these functions. See the '*COMMAND MODE*GETTING SET UP.

The power up sequence will also load in two other files in addition to the initialization parameters (INIT/PAR). These are 'TABLE1/TAB' and

'TABLE2/TAB'. TABLE1/TAB is a key redefinition table. The first 20 BYTES are the keys that are redefined and the next 20 BYTES are the redefined values that will be output (to send a redefined key, first tap the (UP ARROW) and then the key. TABLE1/TAB as supplied with UNITERM/80 performs the following key redefinition.

KEY	HEX ASCII VALUE	HEX OUT VALUE	OUT DESCRIPTION
0	30	00	NULL
1	31	1B	ESCAPE
2	32	7B	LEFT INCLUSIVE
3	33	7D	RIGHT INCLUSIVE
4	34	7C	VERTICAL BAR
5	35	7E	WAVE
6	36	5C	REVERSE SLANT
7	37	60	REV APOSTROPHE
8	38	5B	LEFT BRACKET
9	39	5D	RIGHT BRACKET
-	2D	5F	UNDERSCORE

TABLE2/TAB is a full 256 BYTE Input/Output Translation table. This translation takes place just prior to all output and immediately after input from the serial port. The table supplied with UNITERM/80 is a straight 00H to FFH translation (No Translation). Future tables will be made available via the Bulletin Boards and MicroNET as the need is identified. Modification of these tables is discussed in APPENDIX II.

NOTE: Both of these tables ('TABLE1/TAB' and 'TABLE2/TAB') must be on a mounted diskette for UNITERM/80 to load.

COMMAND MODE

The ***COMMAND MODE*** is activated by pressing the (SHIFT) and the (UP ARROW) keys together. The prompt '***COMMAND MODE***' will be printed at the top center of the screen. Pressing one of the following keys will activate the function alongside of the letter.

- A Activate AUTOBUFFER Open/Close Feature.
- B Load or Save Binary Files
- C Close Buffer
- D Display or Print Buffer
- E Execute DOS Commands
- H Select Half or Full Duplex
- I Define Initialization Parameters
- L Load ASCII File to Buffer
- M Change Modem Parameters
- O Open and Zero Buffer
- P Send Buffer in Prompt Mode
- R Send Buffer with Auto Open/Close Buffer Codes
(Block Format)
- S Save Buffer in ASCII Format
- T Transmit Buffer (Block Format)
- W Set Screen Width
- X Type to Buffer
- Z Display Command List (Except this command)

Depressing any other key will return 'INVALID COMMAND' and jump to the terminal mode.

NOTE

USE UPPER CASE ONLY WHILE IN THE COMMAND MODE

ACTIVATE AUTOBUFFER

AUTOBUFFER is one of the most powerful features of an intelligent terminal program. UNITERM/80 has the ability to receive data from another user, BBS, Host System, Time Share System, etc., and save the data on disk for use at a later time.

In order to ensure a clean copy of the data that you are receiving, it is necessary for the buffer to be opened just before the start of the transmission and to be closed at the end of the transmission. This will provide a 'CLEAN' copy of the data/program/text in the buffer of the computer. UNITERM/80 will respond to the R-on/R-off of most Host Systems, as well as many other terminal programs.

When using the AUTOBUFFER feature an 'A' will appear in the upper right corner of the display indicating that the buffer is 'ARMED'. The CONTROL-R (CHR\$(18)) will open the buffer from the remote location and set up UNITERM/80 to receive data. The 'A' will be replaced in the corner by an 'F' indicating that the buffer is open and receiving data. When the system sending the data is finished, a CONTROL-T (CHR\$(20)) will close the buffer and return to the normal TERMINAL MODE. The 'F' will disappear and the 'BUFFER CLOSED' message will be displayed.

The file is now in the buffer and is ready to be saved on the disk, displayed on the screen, or printed to the printer (see COMMANDS B, D, and S for information on these features).

The AUTOBUFFER feature is a one shot operation meaning that the buffer will not reopen if another CONTROL-R is received. You must reactivate the AUTOBUFFER with another COMMAND A if so desired.

If you desire to add to the buffer after it has received a file, then you may not want to use this feature. Since the buffer is automatically closed after file transmission is complete, the only way you can add to the buffer is by typing to it with COMMAND X or loading an ASCII file from the disk (see sections on COMMAND X and L for further information). If you should end up in the situation you can always save the file (COMMAND S) and then load it in while the buffer is open (COMMAND O followed by COMMAND L). See the sections on COMMANDS S, L, and O for further information. To avoid this problem, use the manual buffer open feature (COMMAND O) instead of the AUTOBUFFER feature if you want to add to the buffer afterwards.

LOAD OR SAVE BINARY FILES

Terminal programs are able to receive and send characters that can be printed to the screen and displayed. These characters are known as ASCII characters. It is necessary at times to send data over the phone that does not meet the standards for ASCII transmission, and therefore would not be properly communicated between two users. This type of data is referred to as binary data, as it includes all values between 0 and 255. Many of these values are not able to be received by terminal programs.

To work out this problem, a standard was set in 1979, that utilized a scheme that converted each byte of data to two bytes of ASCII encoded data. This made transmission of binary information possible, and is the standard used by UNITERM/80.

The use of this command will open up the world of transmitting and receiving files to include any type. Object Files, Assembler Source Files or any file containing Non-ASCII data can be transmitted and received with this feature of UNITERM/80. All data is converted from binary to ASCII characters as it is loaded from disk to the buffer with the LOAD feature of this command. The buffer can then be transmitted, displayed, or printed as with any other ASCII data. The SAVE feature of this command will take the ASCII representation of binary data and convert it to binary as it writes it to disk. This would be done on the receiving end of the file transmission. The file will now be on the receiving party's disk just as it was on the transmitting party's disk. To LOAD or SAVE binary data, enter the *COMMAND MODE* and press the (B) key. UNITERM/80 will prompt you with the question '(L)OAD OR (S)AVE BINARY FILE?'.

A response of (L) will load in the proper OVERLAY (if not already present...See OVERLAY Section for information) and prompt you with the 'FILE SPEC...' question. After receiving the file name, UNITERM/80 will convert and load the file to the buffer, display a completion message and return to the TERMINAL MODE.

A response of (S) will load in the proper overlay (If not already present...See OVERLAY Section for information) and prompt you with the 'FILE SPEC...' question. After receiving the file name, UNITERM/80 will convert and save the buffer contents to disk. If ASCII characters other than 0 thru 9, A thru F or (C/R) are encountered UNITERM/80 may not be able to convert the buffer. A 'BUFFER FORMAT ERROR' message will be displayed if this occurs and you will be returned to the TERMINAL MODE.

CLOSE BUFFER

After receiving text into your buffer, it may be necessary to close the buffer manually. This is the case if you are using the AUTOBUFFER feature and the host computer, BBS, or other user has not transmitted the Control T (CHR\$(20)) or you are not using the AUTOBUFFER feature. To close the buffer enter the *COMMAND MODE* and depress (C). The buffer will close and the contents of the buffer will be protected from additional text.

This method closes the buffer permanently until another COMMAND 0 is initiated. If you would like to protect the buffer from additional text temporarily, DO NOT USE THIS COMMAND. Instead use the (SHIFT) and (@) feature which simply toggles the buffer open and closed provided that the buffer has been opened manually, or by the sending system while in AUTOBUFFER Mode. The (SHIFT) and (@) does nothing if the buffer has been closed by COMMAND C (or R/off in AUTOBUFFER Mode).

DISPLAY OR PRINT BUFFER

Unlike many other terminal programs, it is possible for you to view the contents of your buffer to be sure that the file you just received (or are about to send) is complete and without errors. After entering the *COMMAND MODE*, press the (D) key and you will be prompted to respond to the question of printer or screen. If you respond with the (P) key, the buffer will be printed to the line printer if it is available. The break key will free you from waiting for a non-existent or insubordinate printer, or simply boring text.

If you choose the screen (with the (ENTER) Key), you will be asked for the number of lines to display at a time (the default is 16), and then the first lines will be displayed. The screen will be formatted according to the screen width specified with COMMAND W. If COMMAND W has not been executed during this session then the value specified during the last Initialization (COMMAND I) will be used. If no Initialization file exists (INIT/PAR) a default value of 59 will be used. The screen width feature is explained in detail in the section on COMMAND W, but essentially this means that the display routine will attempt to break lines between words or after punctuation once a line has reached the specified length.

You may display additional lines by depressing any key after each screen of display. When the last line has been displayed, an 'END OF BUFFER' message will be displayed and hitting any key will return you to the TERMINAL MODE.

EXECUTE DOS COMMANDS

You may find it necessary to execute a DOS Command or even another program (such as SUPERZAP) which does not interfere with the memory area occupied by UNITERM/80. This can be accomplished by entering the *COMMAND MODE* and pressing the (E) key. At this time you will be prompted with 'DOS COMMAND....'. Type in the DOS Command or program name that you wish to execute (up to 79 characters) and hit the (ENTER) key. Upon completion of the DOS Command or program, UNITERM/80 will ask if you want another command. A response of anything other than (Y) will return you to the TERMINAL MODE, (Y) will prompt you with 'DOS COMMAND.....' again.

If for some reason you wish to exit from UNITERM/80 while on line, this can be accomplished by pressing the (ENTER) key in response to 'DOS COMMAND...'. You will return to NEWDOS/80 READY and may now look at the Directory, Free Space, or other functions. After you are finished with this task, you may return to UNITERM/80 where you left off by typing 'RET' (ENTER) from NEWDOS/80 READY. This command will return you to UNITERM/80 if you have not written over it with another program from DOS. UNITERM/80's parameters and buffer will be in the same condition as when you left.

HALF OR FULL DUPLEX

This command allows you to select HALF or FULL DUPLEX terminal operation. In the FULL DUPLEX mode characters sent by your terminal are not displayed by UNITERM/80. Instead the host system sends them back to you as an echo at the same time you are sending other characters. It is these returned characters that appear on your screen. This is the mode that most host systems use and subsequently UNITERM/80 powers up in this mode.

The HALF DUPLEX mode will assume that no echo will be sent back by the host. Therefore, in this mode UNITERM/80 will display all characters as they are sent out. If you use HALF DUPLEX with an echoing Host System you will see two of all the characters you send displayed on the screen.

To change modes, enter the *COMMAND MODE*, and then press the (H) key. You will be asked 'FULL OR HALF DUPLEX?'. Simply respond with the (F) or (H) key.

If you respond with an (F) you will be returned to the TERMINAL MODE in FULL DUPLEX operation. A response of (H) will result in another question 'SIMULATE FULL DUPLEX HOST?'. A response of any key but (Y) will return you to the terminal mode in HALF DUPLEX operation.

If you respond with (Y), UNITERM/80 will operate in HALF DUPLEX but all characters received will be returned to the sender immediately. This allows UNITERM/80 to operate with another system using the FULL DUPLEX mode. This feature is very useful since, in the UNITERM/80 FULL DUPLEX transmit mode, no characters are sent until the previous character is received (see COMMAND T). The reliability of long transmissions is significantly improved using this method. This feature will work with other sending programs also if they wait for echo during file transmission in the FULL DUPLEX mode.

INITIALIZATION PARAMETERS

With the use of this command, the default parameters specified in the section labeled 'GETTING SET UP' can be modified and written to a disk file named INIT/PAR. This file is loaded on execution of UNITERM/80. Therefore the new parameters will be in effect now and in future runs until this command is executed again. If you would like to modify the default parameters of UNITERM/80 but do not want to carry the file INIT/PAR on your disk, see the Technical Information Section (APPENDIX V) for a possible solution.

To execute COMMAND I, enter the *COMMAND MODE* and press (I). Each parameter that can be modified will prompt you with a question. A response of (ENTER) will leave that parameter unchanged (except for the modem parameters which will badger you for an answer).

The following are the questions and their meaning:

1. 'SEND LF AFTER EACH CR ?'. A response of (Y) will cause a line feed to be transmitted following the transmission of each carriage return. A response of (N) will disable this feature.
2. The second parameter is handled exactly the same as execution of the screen width feature. See COMMAND W for further information.
3. 'CONNECT MSG:' Type the message you want transmitted when you press (Up Arrow), (C). Press (ENTER) when finished (maximum length=62 characters). See Special Features Section for more information.
4. 'SIGN-ON MSG:' Type the message you want transmitted when you press (Up Arrow), (S). Press (ENTER) when finished (maximum length =62 characters). See Special Features Section for more information.
5. 'AUTO LOG-ON MSG:' Type the message you want transmitted upon receipt of a CONTROL-E (CHR\$(5)). Press (ENTER) when finished (maximum length = 62 characters) (see section 'CONNECTING TO CONNECTION-80 BBS SYSTEMS' for more information on this feature.
6. 'POLLING MSG:' - Type the message you want transmitted upon receipt of the polling signal (3 CONTROL-A's). Press (ENTER) when finished (maximum length = 62 characters). See CONNECTING TO CONNECTION-80 BBS section for information on applications of this feature.

7. The seventh parameter is handled exactly the same as execution of the 'CHANGE MODEM PARAMETERS' feature. See COMMAND M for additional information.
8. 'HOST PROMPT?' - Enter the character to be used as the default host system prompt character used by COMMAND P.
9. 'PORT ADDRESS OF MODEM (LOWEST)?' Respond with the decimal value of the lowest of the four ports to be used (ex. use 232 for the normal RS-232C serial interface). Press (ENTER) after the value. See the section labeled 'GETTING SET UP' for further information on the use of this parameter.

When all questions have been answered the file 'INIT/PAR' will be written to disk, and UNITERM/80 will return to the TERMINAL MODE. If the previous contents of 'INIT/PAR' are still needed you must rename the file to something else prior to the execution of this command (see COMMAND E for information on returning to DOS temporarily). If this method is used, many variations of the 'INIT/PAR' can be saved. The one that you have renamed 'INIT/PAR' will be loaded at run-time, thereby customizing UNITERM/80 for the system of your choice.

LOAD ASCII FILE INTO MEMORY BUFFER

Other commands in UNITERM/80 provide you with the ability to capture ASCII data in the buffer and then display, print, or save the data. This command will allow you to load ASCII data from a previously saved file (COMMAND S) or from ASCII files generated by other programs such as word processors. It is even possible to concatenate files in the buffer with the use of this command.

To load an ASCII file enter the *COMMAND MODE* and press the (L) key. You will be prompted with 'ADD TO CONTENTS OF BUFFER?'. A response of anything but (Y) will clear the buffer and ask for a file name to load from. If the (Y) key is pressed the buffer will not be cleared and the file will be added to the buffer following its current contents.

After the file is loaded an ending message will be displayed and UNITERM/80 will return to the TERMINAL MODE. The buffer can now be displayed, printed, transmitted or even resaved as one file if concatenation of the data has been performed. (See COMMANDS D, T, R and S).

If the file you are LOADING is larger than the buffer space available, a 'BUFFER FULL' message will be displayed and LOADING will be terminated. UNITERM/80 will return to the TERMINAL MODE with as much data in the buffer as it was able to load successfully.

CHANGE MODEM PARAMETERS

Modem parameters need to be changed from time to time to match the system that you are communicating with. UNITERM/80 powers up with 300 BAUD, 7 BIT WORD, 1 STOP BIT, and EVEN PARITY (unless an INIT/PAR file has been created using the Initialization feature (see COMMAND I)).

To change these parameters enter the *COMMAND MODE* and press the (M) key. UNITERM/80 will then prompt you with the questions necessary for the modem being used at the present time. Answer each question followed by (ENTER) and the modem will be set accordingly. You will be returned to the terminal mode with the new parameters in use. These will remain the same until another COMMAND M is initiated or UNITERM/80 is re-run.

To change these parameters permanently, use the Initialization feature of UNITERM/80 (see COMMAND I).

OPEN AND ZERO BUFFER

In order to capture a clean copy of information being transmitted to UNITERM/80, you will probably want to use the AUTOBUFFER mode (see COMMAND A). In some cases though, you may want to be in full control of UNITERM/80s buffer. This command will manually clear and open the buffer causing UNITERM/80 to capture all incoming data in your buffer.

To initiate this feature enter the *COMMAND MODE* and press the (O) key. At this point an 'F' will be displayed in the upper right corner of the display indicating that the buffer is open and any incoming data will be captured.

The power of this feature is realized when used with the TEMPORARY CLOSE feature of UNITERM/80. You may open the buffer (COMMAND O) and then temporarily close it immediately using the (SHIFT) and (@) keys. Now as data comes in you can dynamically instruct UNITERM/80 to begin capturing data, stop capturing data, and even begin and stop again as often as you wish by repeatedly using the (SHIFT) and (@) keys. The 'F' will go on and off in the upper right corner as the buffer is opened and closed informing you of the current status of your buffer. When you are finished you can close the buffer permanently if you wish (see COMMAND C) which will deactivate the TEMPORARY CLOSE feature until the buffer is cleared and opened again with COMMAND O or the [R-ON] signal in the AUTOBUFFER mode.

At this point the buffer will contain only the data that was received while the buffer was open. The data can be displayed to the screen, printed to the printer, or saved on the disk by using COMMANDS D, B, or S.

SEND BUFFER IN PROMPT MODE

The use of this command will enable you to send a buffer full of instructions to a host system. The file can be loaded to the buffer (COMMAND L) and transmitted to the host by entering the *COMMAND MODE* and pressing the (P) key. UNITERM/80 will ask you to define the host system's prompt character. A response of anything but the (CLEAR) key will be accepted as the Host System's PROMPT. If the (CLEAR) key is pressed, UNITERM/80 will use the character specified during the latest initialization (see COMMAND I). If no initialization file (INIT/PAR) exists, the default character '?' will be used as the host system prompt.

The operation of this command is the same as that of the manual transmission mode (COMMAND T) with the following exception:

1. Each time a Carriage Return (C/R) is sent by UNITERM/80, transmission will be halted. UNITERM/80 will wait for the host system prompt character to be sent indicating the need for further response from UNITERM/80. At this point buffer transmission will resume through the next (C/R). This will be repeated until the entire buffer has been transmitted in this fashion. UNITERM/80 will then display the 'TRANSMISSION COMPLETE' message and return to the TERMINAL MODE.
2. In the FULL DUPLEX mode UNITERM/80 will not verify each character sent but will wait for it to be returned prior to sending the next character. HALF DUPLEX is the same as in COMMAND T.

SEND BUFFER WITH AUTOBUFFER CODES

This feature of UNITERM/80 is designed to be used with a receiving system with its AUTOBUFFER feature activated. The operation of this feature is identical to that of the normal transmit mode (command T) with the following exceptions:

1. A CONTROL-R (CHR\$(18)) is transmitted prior to transmission of the buffer contents. This will cause the receiving system's buffer to be opened if it has an activated AUTOBUFFER feature.
2. A CONTROL-T (CHR\$(20)) is transmitted upon completion of the buffer transmission. This will close the receiving system's buffer if it has an activated AUTOBUFFER feature.

SAVE BUFFER IN ASCII FORMAT

This feature of UNITERM/80 is the normal disk save mode. The contents of the buffer are written to disk exactly as they exist in memory. Files saved with this command are compatible with other programs that read ASCII disk files (such as word processors).

To save the buffer contents with this feature enter the *COMMAND MODE* and press (S). UNITERM/80 will request a file name and then write the contents to disk with the name you selected. If a file on the disk is named the same as the file name selected, this file will be overwritten. Upon completion of a successful SAVE, a 'BUFFER SAVED' message will be displayed and UNITERM/80 will return to the TERMINAL MODE.

TRANSMIT BUFFER IN BLOCK FORMAT

Block format is the 'normal' buffer transmission mode of UNITERM/80. The contents of the buffer will be sent from the beginning to end as long as the receiving system does not halt or abort the transmission. If the prompt mode of transmission is desired see COMMAND P. In addition, this mode of transmission will not send the R-on/R-off control codes expected by the AUTOBUFFER feature on the receiving end (see COMMAND A & R).

To send a file in this mode enter the *COMMAND MODE* and press (T). UNITERM/80 will then prompt you with a speed question. This feature is incorporated to allow transmission to slower or less reliable systems.

A speed of '0' is the slowest and '9' is the fastest. If you are operating in the FULL DUPLEX mode you should always be able to use the fastest speed since, after each character is transmitted, UNITERM/80 will wait for the host to return the previously sent character and verify it before sending the next character. This feature will cause some sensitivity, but transmission reliability increases tremendously (100%), especially with timeshare systems. These big systems sometimes get distracted for a while and miss a few bytes here and there if the sending system is not waiting for an echo. If you don't want UNITERM/80 to wait for and verify the echo during transmission, set UNITERM/80 for HALF DUPLEX operation (see COMMAND H). UNITERM/80 will not display characters returned by the host system in the HALF DUPLEX transmission mode.

If a CONTROL-S is received during transmission UNITERM/80 will wait for a CONTROL-Q to resume or a CONTROL-C to abort transmission. If UNITERM/80 aborts transmission, 'TRANSMISSION ABORTED BY RECEIVER' will be displayed and you will be returned to the TERMINAL MODE. This feature will allow the receiving party to stop a lengthy transmission being sent by you before the file has been completely sent (see 'SPECIAL FEATURES' section).

If anything other than CONTROL-S or the characters being transmitted is received in the FULL DUPLEX transmission mode, UNITERM/80 will display the 'TRANSMISSION VERIFY ERROR' message and return to TERMINAL MODE.

SET SCREEN WIDTH

The screen width feature of UNITERM/80 is used to set the length of lines displayed on the screen. When a line being displayed reaches the value selected, UNITERM/80 will search for the first occurrence of a space or punctuation and break the line at that point. To execute this command enter the *COMMAND MODE*, press (W), and answer the line width question. If a value of 50-55 is used, characters coming in from the modem, or being displayed by COMMAND D, will be formatted in an easily readable form (the smaller the value selected the higher the probability that no words will be broken). Any value can be input from 0 to 64.

If a value of less than 32 is selected you will be prompted with the question 'DOUBLE SIZE CHARACTERS?'. A response of anything but (Y) will be handled as 'NO'. If the (Y) key is pressed the screen will lock into the 32 character mode until this command is executed again. UNITERM/80 will still break lines as described above. To return to the normal character size, use this command and specify a line length greater than 32.

Although UNITERM/80 will operate smoothly in this mode, messages were not designed to be less than 32 characters in length. Therefore some messages or prompts will have words broken as they are displayed in the 32 character mode. Again, this will have no effect on the operation of UNITERM/80.

TYPE TO BUFFER

The ability to type directly to UNITERM/80s buffer is an extremely handy feature. Files can be LOADED (COMMAND L) and additional text added before transmitting the file to another system. Text can also be added to data received prior to SAVING it on disk (COMMAND S). In addition text can be generated on its own to be saved or transmitted even while you are not connected to another system.

If you want to add text to existing data in the buffer enter the *COMMAND MODE* and press (X). UNITERM/80 will provide a clear screen to work on and will not allow backspacing over the original contents of the buffer. In fact, backspacing is only allowed as far back as the upper left corner of the screen. Therefore, corrections should be made before the problem area is allowed to scroll off the screen. When text generation is complete press (Up Arrow). This will again clear the screen and return to the TERMINAL MODE. COMMAND D can be used to display or print the new contents of the buffer (see COMMAND D for further information).

If text is to be generated starting at the beginning of the buffer, simply execute COMMAND O followed by COMMAND C. This will open and zero the buffer and then close it. Now COMMAND X will begin text generation to an empty buffer.

DISPLAY COMMAND LIST

COMMAND Z will call in the command list overlay from the disk. This module will clear the screen, and display the following list:

- A Activate AUTOBUFFER Open/Close Feature
- B Load or Save Binary Files
- C Close Buffer
- D Display or Print Buffer
- E Execute DOS Commands
- H Select Half or Full Duplex
- I Define Initialization Parameters
- L Load ASCII File to Buffer
- M Change Modem Parameters
- O Open and Zero Buffer
- P Send Buffer in Prompt Mode
- R Send Buffer with Auto Open/Close Buffer Codes
- S Save Buffer in ASCII Format
- T Transmit Buffer (Normal)
- W Set Screen Width
- X Type to Buffer

As you notice, the only command not displayed is COMMAND Z itself. All other commands are shown. This overlay is called in from the disk to the 1K overlay area. If you recall this overlay and no other overlay has cleared it, then the list will display immediately with no wait for the disk drive. More information on overlays is contained in the 'OVERLAYS' section of this manual.

NOTE

This command will only display the command list properly when using the normal screen character size (64/line).

SPECIAL FEATURES

When in the terminal mode, the following features can be activated from the Keyboard.

(SHIFT) & (UP ARROW)	Enter *COMMAND MODE*
(SHIFT) & (DOWN ARROW) & (B to Y)	Transmit Control character (B to Y)
(CLEAR)	Clear Screen
(SHIFT) & (@)	Toggle Buffer Open/Close (If buffer has already been opened with COMMAND O or R-Off)
(SHIFT) & (O)	Toggle Keyboard 'Shift Lock' (Model III Only)
(UP ARROW) then (C)	Send Connect Message
(UP ARROW) then (S)	Send Sign-on Message
(UP ARROW) then (P)	Activate Printer
(UP ARROW) then (O)	Deactivate Printer
(UP ARROW) then (A)	Send Control A
(UP ARROW) then (Z)	Send Control Z
(UP ARROW) then (Any other key) *	Send Redefined Value
(BREAK) key (Not TERMINAL MODE)	Abort from printing, transmitting, waiting for host echo, etc.
(BREAK) key (TERMINAL MODE)	Send TRUE BREAK signal

*The ASCII value of the key must be in the Key Re-definition Table (TABLE1/TAB) loaded during system startup. If not, an 'INVALID CHARACTER' message will be displayed.

The printer driver for UNITERM/80 also has the rather nice feature of automatically skipping over the perforation on continuous form paper. When used with a printer, UNITERM/80 will print 60 lines of information and then automatically skip 6 lines. This will give you a 3 line border on the top and bottom of each page. For information on disabling this feature, see the 'TECHNICAL INFORMATION' section in this manual.

MODEL I INSTRUCTIONS

UNITERM/80 is supplied on a single density 35 track diskette with a special transfer program by Kim Watt. This utility will allow you to transfer the file from the distribution disk to an operating system disk even with a one drive system.

To transfer the files from the distribution disk to the Operating System disk, place the distribution disk in drive '0' and press reset to boot the system. The screen will display a message showing the directory of the disk and will prompt you to place an operating system into drive 0. Follow the prompts and all the files will be transferred to the Operating System disk.

This procedure is only necessary if you have a single drive system. If you have more than one drive, place the distribution disk in the second drive (drive '1') and copy the files from the distribution disk to the Operating System disk in the normal manner.

After you have copied the files onto the Operating System disk, place the master copy back in the manual binder for safe keeping. You may now make a minimal version of the program as described in APPENDIX III in the back of this manual.

MODEL III INSTRUCTIONS

UNITERM/80 is supplied on a single density 35 track diskette. To transfer the files to your system disk, place the distribution disk in drive 1 and use the PDRIVE table as described in your NEWDOS/80 Operating Manual for reading single density 35 track diskettes.

Transfer over all files from the distribution diskette to your NEWDOS/80 system diskette. After you have done so, place the original diskette in a safe location for future use.

All NEWDOS/80 features for the Model III (ie. U/L case, screen dump, keyboard and video drivers) are left intact.

RS-232C INTERFACE

UNITERM/80 is designed to work with all major (and some minor) communication standards. The most common of these standards is the RS-232C Interface. On the Model I, an RS-232C board (if used) must be placed into the expansion interface and then connected to a modem. The RS-232C

board is the device that receives data from the CPU from eight lines simultaneously and converts it to serial data to be sent to the modem or another computer.

On the Model III, the RS-232C board (if used) is in the main unit behind the P.C. Board. If your unit is equipped with an RS-232C Board, there will be a 25 pin plug under the computer, behind the 50 pin edge card connector.

In either case, if there is an RS-232C Interface in your TRS-80, UNITERM/80 will find it and set it to the parameters in the default table (or the INIT/PAR table) if present.

If the RS-232C Interface is to be used for other devices and a port selectable modem is to be used with UNITERM/80, use COMMAND I to define the other port to be used then return to DOS READY (COMMAND E) to re-execute UNITERM/80. This port will be checked for an active serial device from now on instead of port 232.

LYNX MODEM

An alternative to the use of an RS-232C Board in the Model I & III is the LYNX Modem. This Modem will operate with the Model I & III without the need of an RS-232C Board. In the Model I it will act as an RS-232C Interface and address to the same ports. In the Model III, the LYNX may be addressed to any four consecutive ports available. These parameters may be set in advance by setting the Initialization Parameters (Command I). UNITERM/80 will look for the LYNX modem at port 232 if no Initialization has been performed, and if not found, will ask for a port number to be used. Ports other than 232 can be used on the Model III with the LYNX.

Be sure power is applied to your LYNX before starting UNITERM/80, as an unpowered LYNX looks the same as no LYNX at all.

NOTE

If you are using this modem on a port other than 232 and have a Radio Shack RS-232C board UNITERM/80 will find the RS-232 board and configure itself for that protocol. To prevent this, set the initialization port address to the one to be used. Once this is done, UNITERM/80 will look for the custom ports specified by 'INIT/PAR'.

CHATTERBOX MODEM

Another type of modem is the CHATTERBOX modem. This modem has the ability to select the ports of the RS-232 type interface (the same as the Model III LYNX modem). When using this modem on a Model I, UNITERM/80 will look for a MicroCONNECTION modem at Port 208, and then look at Port 232 for an RS-232C interface. If UNITERM/80 does not find either of these interfaces, it will ask the 'PORT ADDRESS OF MODEL (LOWEST OF THE FOUR)?' question. This procedure is identical to the Model III LYNX procedure.

You may specify the port to be used with your modem by using the Initialization feature (COMMAND I).

NOTE

If you are using this modem on a port other than 232 and have a Radio Shack RS-232C board UNITERM/80 will find the RS-232 board, and configure itself for that protocol. To prevent this, set the initialization port address to the one to be used. Once this is done, UNITERM/80 will look for the custom ports specified by 'INIT/PAR'.

MICROCONNECTION MODEM

Another alternative to the RS-232C Board is the MicroCONNECTION modem. This device will work only on the Model I. It is addressed to a location other than port 232 as is the case with the RS-232C Interface, and the LYNX modem on the Model I (it is at port 208).

UNITERM/80 will look at this port first during Model I powerup and, upon finding no modem here, will look for one at Port 232. It is possible to have an RS-232C Interface as well as a MicroCONNECTION modem on at the same time. Therefore, if RS-232C use is desired instead of the MicroCONNECTION modem, you must turn off the MicroCONNECTION when you power up UNITERM/80.

CONNECTING TO MICRONET

MicroNET is the name of the CompuServe Information Network System for hobby users and it is a multi-mainframe system based in Columbus, Ohio. To connect to this system, you must first be a subscriber (there are a number of ways to acquire a CompuServe subscription).

After following the instructions from your subscription pack and dialing your nearest input node, press the CONTROL C as described in the 'SPECIAL FEATURES' section. This will start your connection. Answer the questions of 'User ID' and 'PASSWORD', as they have been assigned by CompuServe.

You may store this information in your CONNECT & SIGN-ON messages, (Up Arrow) then (C) & (Up Arrow) then (S), for fast connects in the future. If you are in CompuServe, the screen width sent to you is limited to 32 characters/line. You may find double sized characters easier to read in this section of the system. Follow the instructions in the 'Set Screen Width' section (COMMAND W) for more information.

CONNECTING TO THE SOURCE

The Source Telecomputing Corporation is located in McLean, Virginia. It is a similar system to MicroNet, in that it is a hobby oriented system. You must be a subscriber to access the system (there are many locations available to acquire a subscription). Follow the Source User's Guide for specific instructions on connecting to the system. UNITERM/80 will work directly with the Source. To custom configure your account on the Source, refer to the Source User's Guide and COMMAND M of UNITERM/80 for more information.

CONNECTING TO CONNECTION-80 BBS'S

There are many public access systems for you to use free of charge (except for the phone call!). One of the largest systems in use at the present time is the CONNECTION-80 Network. A list of Public Access System numbers is listed at the back of this manual (APPENDIX VII).

The use of CONNECTION-80 Systems is very similiar to the procedure used for the Source and MicroNET. The exception is no need for account numbers and passwords. You may automatically log-on to the systems if you have specified the 'AUTOLOG-ON message to be used during 'INITIALIZATION' (See COMMAND I). The format is:

'FIRST NAME;LAST NAME;CALLING FROM'

Many CONNECTION-80 systems have the ability to speed up the log-on procedure with the use of the polling message. This feature will allow you to connect to the systems with the fastest speed. To use this feature, use (COMMAND I) and enter the 'POLLING MSG' as follows: start the line with an '*', follow it with your first name, a space, and then your last name and finally a ';'. If your name is John Jones, you would enter the line:

'*JOHN JONES;'

Be sure to use UPPER CASE only, and type only the text between the (')s. For more information on this feature, contact the SYSOP (System Operator) of the CONNECTION-80 system.

Call the system of your choice and when the tone is heard in the phone, place your modem on line (or place the phone in the coupler if an acoustic coupler is being used). The system will automatically start and you will be welcomed to the CONNECTION-80 of..... You will be asked to press (ENTER) if you are a TRS-80. Press the (ENTER) key and you will be prompted to hit 'X' to skip the sign-on messages. If you are not in a rush and you have not read this file already, then take a moment to read it. It is usually informative and fun.

The BBS will now look for the AUTO LOG-ON and if present, you will be logged on the system automatically. Otherwise, enter your last name and then your first name. If you have been on the system recently, it will remember you and advise you of the last time you were on and the last message number at that time.

You can read messages, leave a message, read the Bulletin files, or read and LOAD the files and programs in the Download section of the BBS. Use the AUTOBUFFER feature with the CONNECTION-80 BBS system, as it will

send the control codes to open and close the buffer of UNITERM/80 to transfer a clean copy of the file or program.

You may also use COMMAND P to send messages that you have composed with COMMAND X or your word processor off line. This will ensure a clean message, with a minimum of connect time (Phone charges!) even to systems far away.

If you desire more information on the CONNECTION-80 BBS systems, call (516) 588-5836 (CONNECTION-80 BBS Headquarters) for a free user's manual on the CONNECTION-80 BBS system.

CONNECTING TO OTHER SYSTEMS

There are many other systems available for your use and pleasure. A partial list of these free systems is listed under Public Access Systems (APPENDIX VII) courtesy of Dale Vaughn and Log-On Magazine.

You can obtain a copy of the most up to date list of these BBS systems by calling Mr. Vaughn's system at (303) 399-8858. You can also keep up to date on the latest happenings in the Telecommunications field by subscribing to Log-On Magazine. Contact:

Socratic Enterprises, Inc.
1405 Krameria Street
Office 3C
Denver, Colorado 80220

Ask about rate reductions for UNITERM/80 owners.

FUTURE ENHANCEMENTS

Future enhancements to UNITERM/80 will be in the form of additional overlay modules. Registered owners of UNITERM/80 will be notified by mail as soon as new modules are available. The mailing will contain the BBS systems that are carrying the enhancements and the Download file numbers to take the modules from, as well as additional documentation required for the new features.

The structure of UNITERM/80 was designed to allow UNITERM/80 to evolve into a more powerful program as time goes on.

Many enhancements are already underway some nearly completed, others in the planning stages. One of the first of these enhancements will be a full screen editor for the buffer. This very powerful feature will allow you to edit the text in your buffer before saving it to disk or sending it to others. This feature will give you the text editing power of a word processor program when used off line.

If you have any suggestions for future enhancements for UNITERM/80 please send it on a post card (or letter) to:

UNITERM/80 Suggestions
c/o B.T. Enterprises
171 Hawkins Road
Centereach, NY 11720

See APPENDIX IV for information on (D)ownloading these new modules.

GLOSSARY OF TERMS:

ACCESS:

To gain entry to a function, system, etc.

ACOUSTIC COUPLER:

A type of modem that is connected to the telephone by inserting the handset of the telephone into two flexible cups on the modem. Sound is passed from the modem to the telephone and back without any electrical connection.

ASCII:

American Standard Code for Information Interchange. This is the standard used most often in TeleCommunications between computers.

BAUD:

This is the speed of the transmission of data from or to your terminal. The speed is measured in bits per second including the start bit, the stop bit, parity bit and word itself (letter or character).

BIT:

This is the building block of a character. It consists of a 0 or a 1, or a binary digit.

BOOT:

Boot is short for bootstrap. It describes the process by which a computer program starts itself up. To boot a computer or program is to start it.

BREAK:

This is the key on the TRS-80 used to interrupt the function or process in progress. UNITERM/80 uses the key in this mode when NOT in the terminal mode. This key may be used to interrupt the transmission of a file or any other UNITERM/80 function in progress. See True Break.

BUFFER:

A storage area for information in the computer's memory. Data is placed into this area for safe keeping and then can be displayed, printed, or saved on disk.

BYTE:

A unit of memory storage. A byte is eight bits in size and can hold any whole number value from 0-255. Normally, one byte will hold one character of data. See also Character, Data Word, Bit.

CARRIAGE RETURN:

A character with an ASCII value of 13 (ODH), that is meant to cause the carriage of a printing terminal to return to the left side of the page.

On the TRS-80, this causes the cursor to move to the beginning of the next line. See also Character, Data Word, Byte.

CHARACTER:

Any single letter, number, punctuation mark, etc. that can be typed from the keyboard, put on the screen, or sent over the comm line. See also Data Word, Byte.

COMM LINE:

Communications line. The hardware interface that UNITERM/80 uses to connect with other equipment. See also RS-232C Interface, LYNX modem, CHATTERBOX modem, and MicroCONNECTION modem.

COMMAND:

Any action that causes UNITERM/80 to do something special. See also the *COMMAND MODE* section of this manual.

CONFIGURE:

To change something, either hardware or software, to make UNITERM/80 act differently. To configure UNITERM/80 is to set it up so that it will do what you want it to do. For example, when you change the translation and special command tables for use with a particular computer, you have configured UNITERM/80 for that computer (See COMMAND I).

CONTROL KEY:

The Down Arrow key on the TRS-80 keyboard. If another key is pressed while the control key is held down, the key will have 64D (40H) subtracted from its value. It is used to produce special characters not directly on the TRS-80 keyboard. See also Character, Byte.

CR:

Short form of Carriage Return.

CURSOR:

A small white block(Model III) or small underscore (Model I) on the screen which is in the spot where the next character on the screen will be printed.

DOS:

Disk Operating System. The program that loads in other programs, runs the disk drives, takes directories, etc.

DATA WORD:

A character as sent over the comm line. It consists of a character up to 8 bits in length, together with start, stop and parity bits, as sent by the UART. See also Byte, Character, Bit.

D:

Short for decimal.

DECIMAL:

The usual numbering system used in everyday life. Decimal numbers are in base 10 and use the digits 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. See also HEX.

DEFAULT:

The way things work if you do not specify otherwise. UNITERM/80 has default values for all functions and if you do not change them, this is what UNITERM/80 will use.

DISPLAY:

The video screen where information is shown.

DUPLEX:

Can be either HALF or FULL. HALF DUPLEX means that characters sent from UNITERM/80 are not echoed by the remote system and so UNITERM/80 must directly place these characters on the display itself. FULL DUPLEX means characters sent from UNITERM/80 are echoed back and UNITERM/80 need not send them to the display, since they will go there anyway when UNITERM/80 receives them.

EXECUTE:

To do a function, run a program, or perform some action.

FILENAME:

The name by which a disk file is referred. In standard TRSDOS format, a filename is up to 8 characters, a slash, up to 3 character extension, a period, up to 8 character password, a colon and a disk drive number. All but the original maximum 8 characters are optional. Also called a Filespec, or file specification. See also Character.

FILESPEC:

See Filename.

FULL DUPLEX:

The process where one computer echos all the characters the other sends. See also Echo, Duplex.

FUNCTION:

Any action UNITERM/80 can take. Can be done by pressing a key, or processing a byte. See also Command.

HALF DUPLEX:

The process where neither computer echos bytes to the other. Instead, each assumes the duty of displaying the characters it sends locally.

HEX:

The base 16, or hexadecimal number system. Used often when working with computers because four bits, exactly half of a byte, fits into one Hex digit. Thus a byte in Hex is always two digits, of 0, 1, 2, 3, 4, 5, 6,

7, 8, 9, A, B, C, D, E and F, corresponding to the decimal numbers 0-15. Most high school math books explain the basis of place-value numbering systems and will teach you how to work with different bases. Displayed in this manual as an H after a number. See also Decimal.

LF:

Short form of line feed.

LINE FEED:

An ASCII character with a value of 10 that is meant to cause the paper on a terminal to move down to the next line. On the TRS-80, this character causes the cursor to go to the beginning of the next line.

MENU:

A list of choices, from which you can pick one. A menu is used by UNITERM/80 to give you a list of possible functions and allow you to choose between them (see COMMAND Z).

MODEM:

A device that connects to your RS-232C interface and a telephone that translates the electrical pulses sent out over the interface into tones that are sent over the phone network so you can send data over long distances. The modem can also translate those tones back into pulses so it can receive data sent by another modem elsewhere. Most popular modems run at 300 baud, with a few as fast as 9600 baud. Modem stands for Modulator/Demodulator. See also Acoustic Coupler. UNITERM/80 will work with many types of modems. See Special Instructions section for more information.

PARITY BIT:

A bit that can be added to each data word as either a '1' or a '0' depending on whether the sum of the digits ('1' and '0') are an even or an odd number. If Parity is set even and the total of the bits is even then the parity bit will be '0'. The opposite is true if the parity is set odd, or the total of the bits are odd. This is used for error checking. See also Bit, UART, Data Word.

PRINT BUFFER:

The buffer that UNITERM/80 uses to store characters going to the printer that have not yet been printed. It is 256 Bytes in length. See also Buffer.

PROMPT CHARACTER:

A character that tells UNITERM/80 it can transmit another line of text. (See COMMAND P) see also Character.

RS-232C INTERFACE:

This is one of the hardware devices that connects your computer to outside equipment and forms your communication line. Also see LYNX, CHATTERBOX, and MicroCONNECTION modems.

SCREEN:
See Display.

SCROLL:
When the TRS-80 moves up all the lines of the screen by one line. This takes a certain amount of time to do, so at very high baud rates UNITERM/80 needs extra time at the end of each line.

SPECIAL CHARACTER:
Any character not on the standard TRS-80 keyboard, such as the broken bar, tilde, square brackets, etc. (see 'Special Features').

START BIT:
The bit at the beginning of each data word that marks the start of the word.

STOP BIT:
The bit (or bits) at the end of each data word that mark the end of the word.

TIMESHARING:
A large computer that has many people using it at the same time. Since the computer's time is shared among many users this is called time-sharing.

TRUE BREAK:
A true break is a sort of extended 0 signal sent over the comm line that is usually used to get the attention of the computer connected to the comm line. In UNITERM/80, the <BREAK> key on the keyboard will by default send a true break when in the TERMINAL MODE.

UART:
Universal Asynchronous Receiver Transmitter. The device in the RS-232C interface that serializes the data sent to it and attaches start, stop and parity bits to it. The UART also does the opposite of this operation when receiving data.

WRAP AROUND:
When a word is printed at the end of the screen, the first letters will be on the line it was started on, but the last ones will be at the beginning of the next line. This is called wrap around, because the words wrap around the edge of the screen (see COMMAND W).

BUILDING NEW TABLES

The two tables loaded in at Run-Time (see section on 'GETTING SET UP') can be changed by building new ones as needed. The original 'TABLE1/TAB' and 'TABLE2/TAB' should always be preserved in the event that you have difficulty with this procedure. You can either rename them prior to executing this procedure (see COMMAND E for information on temporary exit to DOS for this purpose) or make sure you have another copy of the disk you are working on.

To build new tables, ASCII representation of the hexadecimal data must be built either in the text buffer (COMMAND X) or off line with a word processor and then loaded to the buffer (COMMAND L). In either case, only the ASCII representation of the hexadecimal data and (C/R)s can be in the buffer NOTHING ELSE!

The next step is to save the buffer to disk with the binary save feature of UNITERM/80 (COMMAND B). Use the file name 'TABLE1/TAB' or 'TABLE2/TAB' as appropriate. Other names may be used if the file is renamed to the proper one later. To use the new table you must re-execute UNITERM/80 which will load 'TABLE1/TAB' and 'TABLE2/TAB' (see section on 'GETTING SET UP'). The following are details on building the ASCII representation of each table.

```
+++++
+   USE ONLY CHARACTERS '0' TO '9' AND 'A' TO 'F' AS   +
+   HEXADECEMAL DATA IS BEING REPRESENTED             +
+++++
```

NOTE:

The curent TABLE1/TAB and TABLE2/TAB can be edited by loading them into the buffer using the BINARY LOAD FEATURE (COMMAND B), and then saving them to disk with COMMAND S. These files can now be edited with a word processor and then the reverse procedure applied (COMMAND L followed by command B-binary save).

TABLE1/TAB

Type the ASCII value of the 20 keys to be redefined, two bytes for each key. Fill with '00's up to 40 characters if 20 keys are not being redefined. At this point hit (ENTER). Now, under each two byte value representing a key, type the ASCII value (two bytes) that you want to be sent as the redefined value. Fill this out to 40 characters with '00's and then press (ENTER). The two lines of text should look like the following representation of 'TABLE1/TAB' supplied with UNITERM/80. The keys redefined here are '0' to '9' & '-'

303132333435363738392D000000000000000000
001B7E7D7C7E5C605B5D5F000000000000000000

If COMMAND X is being used to generate text to the buffer, press the (Up Arrow) key at this time. Use COMMAND D to print the contents of the buffer for future reference prior to converting and saving it with COMMAND B.

TABLE2/TAB

Type the ASCII representation of each value to be used in the translation table (2 characters for each hexadecimal value). The top line of text will be the translation of ASCII codes 00H to 1FH. Lines 2-8 will be the translation of ASCII codes as follows:

LINE	ASCII CODES TRANSLATED
2	20H TO 3FH
3	40H TO 5FH
4	60H TO 7FH
5	80H TO 9FH
6	A0H TO BFH
7	C0H TO DFH
8	E0H TO FFH

With this in mind, type the translated ASCII value in the position of the original character. If you want to block out a value so that it will never be sent or received, place the characters '00' in its position. In addition, if you do not plan to use an 8 bit word length you can type all '00's for lines 5 to 8.

When you have 8 full lines of characters (0 to 9 and A to F only!) press the (ENTER) key. The 8 lines of text should look like the following representation of 'TABLE2/TAB' supplied with UNITERM/80. The translation taking place with this table is NO translation. Each two byte value is the value of the position it is in. This table listing will help when building a similiar table with a few modifications.

```
000102030405060708090A0B0C0D0E0F101112131415161718191A1B1C1D1E1F
202122232425262728292A2B2C2D2E2F303132333435363738393A3B3C3D3E3F
404142434445464748494A4B4C4D4E4F505152535455565758595A5B5C5D5E5F
606162636465666768696A6B6C6D6E6F707172737475767778797A7B7C7D7E7F
808182838485868788898A8B8C8D8E8F909192939495969798999A9B9C9D9E9F
A0A1A2A3A4A5A6A7A8A9AAABACADAEAFB0B1B2B3B4B5B6B7B8B9BABBBBCBDBEBF
C0C1C2C3C4C5C6C7C8C9CACBCCCDCECFD0D1D2D3D4D5D6D7D8D9DADBDCDDDEDF
E0E1E2E3E4E5E6E7E8E9EAEBECEDEEEFF0F1F2F3F4F5F6F7F8F9FAFBFCFDFEFF
```

If COMMAND X is being used to generate text to the buffer press the (Up Arrow) key at this time. Use COMMAND D to print the contents of the buffer for future reference prior to converting and saving it with COMMAND B.

If this section is not clear or seems a bit too much work, do not despair. As tables are built and proven useful they can be passed around or placed in download sections of BBS systems such as CONNECTION-80 for others to use. Use the 'BINARY LOAD AND SAVE' feature of UNITERM/80 to transfer these files in and out of the buffer (COMMAND B).

MAKING A WORKING UNITERM/80 DISKETTE

UNITERM/80 is supplied with 'UNI80/CMD' and seven files on the distribution diskette. Some of these files may be purged from your working diskette if their function does not interest you. The files are as follows:

TSYSCN/SYS - This is the module for the Buss Decoding Version of the MicroCONNECTION. If you do not use this modem you may 'KILL' this file from your working disk.

TSYS01/SYS - This is the OVERLAY module for the *COMMAND MODE* Menu (COMMAND Z). If you never use COMMAND Z you may 'KILL' this file. It is recommended that you keep this file on the disk.

TSYS02/SYS - This is the Initialization Command OVERLAY (COMMAND I). If you will never use COMMAND I you can 'KILL' this file. It is not recommended.

TSYS03/SYS - This is the Binary Load OVERLAY module of COMMAND B. If you never load Binary, Machine Language, or Orchestra-80 files then you may 'KILL' this file. It is not recommended.

TSYS04/SYS - This is the Binary Save OVERLAY module of COMMAND B. If you never save Binary, Machine Language, or Orchestra-80 files then you may 'KILL' this file. It is not recommended.

TABLE1/TAB - This is the key redefinition table. It MUST be resident on the disk in order to start UNITERM/80. DO NOT 'KILL' this file.

TABLE2/TAB - This is the input/output translation table. It also MUST be resident on the diskette in order to start UNITERM/80. DO NOT 'KILL' this file.

RET/CMD - This is the command module that will automatically perform a clean re-entry to UNITERM/80 from DOS. If you never plan to return to UNITERM/80 from DOS you may 'KILL' this file

LOADING IN A NEW PATCH/ENHANCEMENT FILE

Future enhancements to UNITERM/80 will be in the form of additional overlay modules. Registered owners of UNITERM/80 will be notified by mail as soon as new modules are available. The mailing will contain the BBS system that are carrying the enhancement and the Download file numbers to take the modules from, as well as the additional documentation required for the new features.

The procedure for downloading these modules is as follows:

1. Activate the AUTOBUFFER feature of UNITERM/80 (COMMAND A).
2. Connect to the BBS system (or MicroNET). Enter the (D)ownload section and select the module file number to download.
3. When the 'BUFFER CLOSED' message is displayed use COMMAND B to convert and save the buffer to the disk with the file name specified in your notification letter.
4. You now have the new module, but UNITERM/80 doesn't know about it. The latest patch must also be downloaded and saved. Repeat steps 1, 2 & 3 as above (D)ownloading file 888 of the same BBS section (or PAT888.HEX[70331,105] on MicroNET).
5. After the new Module(s) have been saved to disk as well as the new 'PATCH80/SYS' file, sign off the BBS system. Using COMMAND-E to return to DOS, you may now re-execute UNITERM/80 to try the new feature(s).

If only a new patch is to be (D)ownloaded, then start the procedure from step 4.

If this procedure is not successful or you would rather not use this method, the modules can be obtained on disk from B.T. Enterprises for a material and handling fee which will be specified in the mailing.

OVERLAYS

Overlay modules are used by UNITERM/80 for the following reasons:

1. The use of main memory can be kept to a minimum (maximizing the space left for the text buffer) with no compromise on the power and features available to UNITERM/80 users.
2. Future enhancements to UNITERM/80 can and will be issued as additional overlay modules, placing the limitations of UNITERM/80 out towards the end of the disk space. See the 'FUTURE ENHANCEMENTS' section for further details.

Included in the main body of UNITERM/80 is a 1K overlay area. This area is managed by UNITERM/80 in the following manner.

The overlay area can be subdivided into two 512 byte areas depending on the priority of the overlay module being called. Priority '0' modules are those which operate independently of other modules and occupy more than 512 bytes of memory. Priority '1' modules must operate in the top half of the overlay area due to their possible use of a priority '2' module. These priority '2' overlays are also less than 512 bytes in length and will be placed in either the first or second half of the overlay area as follows:

- a. If the first area is open for use it will be place there for execution.
- b. If the first half is occupied by a priority '1' module it will be placed in the second half of the overlay area for execution.
- c. If a priority '0' module is in the overlay area it will be deactivated and the priority '2' module will be placed in the second half for execution.

NOTE: Priority '1' modules will also deactivate a priority '0' module as it is placed in the first half of the overlay area.

Overlay modules are 'special' or 'limited use' features of UNITERM/80 and will be loaded in as necessary. However, once a module is in place, it will remain there for immediate execution (no disk access required) as long as it has not been overwritten by other modules as described in the preceding paragraph. Therefore, your favorite 'special' or 'limited use' feature will become an integral part of UNITERM/80 after it has been executed for the first time of each session.

TECHNICAL INFORMATION

The following information may be useful when trying to use UNITERM/80 with Operating Systems, Host Systems, or applications not described in this manual. Every attempt has been made to cover it all, but inevitably there will be more.

1. UNITERM/80 occupies main memory from 7000H to approximately 8A00H (the end will depend on the 'SATCH80/SYS' file being used). The text buffer resides from the end of UNITERM/80 to the bottom of the stack and the stack goes on to the HIMEM value (4049H-Model I, 4411H-Model III).
2. Buffer size is approximately 14K in a 32K machine and 30K in a 48K machine when HIMEM is not altered by the user.
3. If you leave UNITERM/80 and have not written over the area where it resides (See '1' above), you can successfully reenter UNITERM/80 by jumping to 7350H.
4. Some individuals will not want to use the 'INIT/PAR' file for storing their custom initialization parameters, but would rather zap the UNITERM/80 disk file to change the default power up parameters. To accomodate these individuals the author of UNITERM/80 offers the following relative file locations.
 - A. Sector 0BH, Byte 99H, Length=1
0 = No L/F sent after each C/R in transmission mode.
1 = Send L/F
 - B. Sector 0BH, Byte 9AH, Length=1
1 Byte value of the RS-232C send and receive baud rates (4 bits each)
 - C. Sector 0BH, Byte 9BH, Length=1
1 Byte value of the modem parameters (Parity, Stop bits, Word length, etc.)
 - D. Sector 0BH, Byte 9DH, Length=1
1 Byte value of the screen width desired for clean breaking of words.
 - E. Sector 0BH, Byte A2H, Length=1
1 Byte value of the port to use for a port selectable modem. The value placed here is the third of the four ports used. (Control Port).
 - F. Sector 0BH, Byte A3H, Length=64D
Connect Message sent with (Up Arrow) then (C). The last two bytes of your message must be: 0DH, 60H.

- G. Sector 0BH, Byte E3H, Length=64D
Sign-On Message sent with (Up Arrow) then (S). The last two bytes of your message must be: 0DH, 60H.
 - H. Sector 0CH, Byte 27H, Length=64D
Auto-Log-on Message sent upon receipt of a CONTROL-E (CHR\$(5)). The last two bytes of your message must be: 0DH, 60H.
 - I. Sector 0CH, Byte 67H, Length=64D
Polling Message sent upon receipt of a three CONTROL-A's (3 X CHR\$(1)). The last two bytes of your message must be: 0DH, 60H.
 - J. Sector 0CH, Byte A7H, Length=1
Default host system prompt character (ASCII Value).
 - K. Sector 0CH, Byte A8H, Length=1
0=Normal size characters on CRT.
1=Double size characters on CRT.
5. UNITERM/80 handles printer page formatting as follows: 60 lines/page and 6 line feeds to skip over perforations. The following relative disk sector locations will allow modification of these parameters.
- A. Sector 18H, Byte F7H, Length=1
The number of lines per page minus 1.
 - B. Sector 19H, Byte 00H, Length=1
The number of line feeds performed to skip over perforations.
 - C. Sector 18H, Byte F8H, Length=2
If '00H' is placed in these two locations, then no page formatting will be performed.

PUBLIC ACCESS SYSTEMS

CODING INFORMATION - LOG/ON'S (1) LIST OF PUBLIC BULLETIN BOARD SYSTEMS (VERSION 11/03/81)

Thanks to Dale at LOG/ON for the list.
303 - 399 - 8858

GENERAL INFORMATION - The format for
this coding system is:

AA1BCDEF Name of City ST 333-444-5555
-----*-----

WHERE:

- 01) AA = Type of System
- 02) 1 = Alternate Phone Co. Service
- 03) B = Hours of Operation
- 04) C = Baud Rate
- 05) D = General Features of Board
- 06) E = Special Interest of Board
- 07) F = Additional Features
- 08) = Name of City
- 09) ST = State
- 10) = Phone Number
- 11) * = Special log-on or password
information needed

01) TYPE OF SYSTEM - The information
within the () = author of software
followed by recommended setting in the
form - word length/stop bit/parity.

AB = ABBS - Apple Bulletin Board System
(Craig Vaughan) 7/1/E

AC = ACCESS - Automated Computer
Communication Electronic Service System
(Information Intelligence, Inc.) 7/1/N

BU = BULLET-80 - TRS-80 System
(Joe Simon) 8/1/N

CB = CBBS - Computerized Bulletin Board
System (tm)
(Ward Christensen & Randy Suess) 8/1/N

CO = Connection-80
(R. Taylor - Tom Vande-Stouwe) 8/1/N

CP = CP/M - General Category for
systems run under CP/M

MS = MESSAGE-80 - TRS-80 System
(Richard Taylor) 7/1/E

NW = NET-WORKS - Apple System
(Nick Naimo) 8/1/N

PM = PMS - People's Message System
(Bill Blue) 8/1/N

PS = PSBBS - Program Store Bulletin
Board System - TRS-80 System
(Program Store) 7/1/E

RN = REMOTE NORTH STAR - North Star
(Les Freed & Bob Strong) 7/2/N

OA = OTHER, APPLE - Apple Based

OT = OTHER, TRS-80 - TRS-80 Based

OG = OTHER, GENERAL

02) ALTERNATE PHONE SERVICE:

- | | |
|---------------|--------------|
| 2 = None | 3 = Yes, All |
| 4 = MCI Only | 5 = SPC Only |
| 6 = ITT Only | 7 = MCI/SPC |
| 9 = Not Coded | |

03) HOURS - The hours code for
individual systems is a matter of
"best fit". Code may or may not reflect
actual hours, but will provide the
first time user with a period of time
that the system is available.

Abbreviations used:

SA = Saturday SU = Sunday

SS = Saturday/Sunday

RB = Ring Back EVS = Evenings

A = 24 Hours

B = EVS 24SS

C = EVS 24SU

D = EVS 2100-2400

E = 1200-1700 ALL

F = EVS

G = 2400-1200 ALL

H =

I =

J = 1800-0800 24SS

K = 1800-0600 24SU

L = 1900-0900 24SU

M = 2100-0600 24SU

N = 2100-0800 24SU

O =

P = 1800-0600 ALL

Q = 1800-0800 ALL

R = 2100-0900 ALL

S = 2200-0800 ALL

T = Weekends Only

U = Weekdays Only

V = 2100-2400 RB

PUBLIC ACCESS SYSTEMS

FR = FORUM-80 (tm) - TRS-80 System
(Bill Abney) 8/2/N

04) BAUD RATES:

A = 300	B = 300/1200(212A)
E = 110/300	F = 110/300/600
G = 300/450/600	H = 300/450
I = 300/600	M = 300/DEAF TTY
J = 110/300/450/600+	

05) GENERAL FEATURES OF BOARDS:

Abbreviations used:

GEN = General Message board
DWL = Programs to Download
INF = Articles/Information Files
to Read/Download
ELO = Electronic Ordering
NMF = No Message Function
GTP = Games to Play

@ = GEN	A = GEN/DWL
B = GEN/INF	C = GEN/DWL/INF
D = GEN/ELO	E = GEN/DWL/ELO
F = GEN/INF/ELO	G = GEN/DWL/INF/ELO
2 = NMF	3 = NMF/IFO
4 = NMF/GTP	5 = NMF/IFO/GTP
6 = NMF/DWL	
# = Specialized Msg (See Next Byte)	

06) SPECIAL INTEREST OF BOARD:

A = Amateur Radio	B = Business
C = CP/M	D = Commodities
E = Education	F = Family History
G = Gay (Sexual)	H = Handicap'd Info
I = Real Estate	J = Humor
K = Conference	L =
M = Medical	N = NASA/Space
O =	P = Photography
Q = Aviation	R = Modem Info
S = Self Help	T = Astrology
U =	V = Video
W = Astronomy	X = X-Rated
Y = Apple Info	Z =
@ =	< =
+ =	> =
! =	& =
2 =	3 =
4 =	5 =
6 =	7 =
8 =	9 =
- = Not Coded	

W = 24 Hours RB X = Unknown
Y = 1900-0700 RB Z = 1200-2100 RB
07) ADDITIONAL FEATURES OF BOARD:

B = List of Bulletin Board Numbers
D = Downloading/Electronic Ordering
G = Games to Play
L = Log/On's List of BBS Numbers
O = Download'g of Orchestra 80/85 Files
R = Orch 80/85 and Log/On's List
- = Not Coded

08) CITY - Self Explanatory

09) STATE - Self Explanatory CN = Canada

10) PHONE NUMBER - Self Explanatory

11) ADDITIONAL INFORMATION CODES:

= Headquarters or Base System
* = Additional information needed -
such as log/on codes or password
information. Carried at end of
list by phone number.

(1) Coding information for the list
of Public Bulletin Boards provided by
publishers of Log/On. Log/On sponsors
Forum-80 #2 Denver, CO 303-399-8858
Hours: 1700-0800 Weekdays / 24 Weekends

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Log/On
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Denver, CO 80220

PUBLIC ACCESS SYSTEMS

Log/On's List of
Public Access Bulletin Boards
(Version 11/30/81)

CB3AJAC- Cranford	NJ	201-272-1874	PM3AAB-- Los Angeles	CA	213-334-7614
AB9QA@-- Cranford	NJ	201-272-2783	NW3XA@-- Los Angeles	CA	213-336-5535
OG3GBGA- Glenrock	NJ	201-444-1522	AB3XA@-- Los Angeles	CA	213-345-3670
CO9AAA-R Linden	NJ	201-486-2956	PM3AA@-- Woodland Hills	CA	213-346-1849
FR2AAA-- Moumouth Co	NJ	201-528-6623	AB9RA@-- Los Angeles	CA	213-349-5728
OG9ABA-- Paterson	NJ	201-595-5034	OA3NA#K- Santa Monica	CA	213-394-1505
OA3AA@-- Chatham	NJ	201-635-0705	AB3AA@-- Long Beach	CA	213-422-2704
OG9EA@I- Wayne	NJ	201-694-7425	AB3AA@-- Los Angeles	CA	213-459-6400
OG9AABA- Pequannock	NJ	201-696-8647	NW3AA@-G Los Angeles	CA	213-465-1431
PM2NA@-- Shrewsbury	NJ	201-747-6768	AB3AA@-- Torrance	CA	213-516-7089
OG9AA@A- Little Falls	NJ	201-785-3565	CB3ABAC- Palos Verdes	CA	213-541-2503
MS3EBDPO Haledon	NJ	201-790-6795	OT3A3@-- Los Angeles	CA	213-631-3186
AB2NA@-- Pompton Plains	NJ	201-835-7228	CB3AJAC- Pasadena	CA	213-799-1632
AB2CA@-- Wyckoff	NJ	201-891-7441	OA3AA@-- Los Angeles	CA	213-826-0325
AB3BA@-- Dunellen	NJ	201-968-1074	AB3AA@-- Los Angeles	CA	213-859-0894
MS3ABAX- Livingston	NJ	201-992-4847	OG3AA3RB Los Angeles	CA	*213-881-6880
PS3AJ@-- Washington	DC	#202-337-4694	AB3NA@-- Los Angeles	CA	213-921-2111
OG3BE@-- Washington	DC	*202-635-5730	OT3AAC-- Dallas	TX	214-235-8784
OG9XAG-G Hartford	CT	203-673-9959	AB3AA@-- Dallas	TX	214-248-4539
BU2ABE-O Danbury	CT	#203-744-4644	NW3AA@-- Dallas	TX	214-361-1386
FR2AAC-G Montgomery	AL	205-272-5069	AB3AA@-- Dallas	TX	214-369-0427
CP2WJAC- Huntsville	AL	205-895-6749	AB3AA@-- Dallas	TX	214-530-0858
AB5AA@-- Seattle	WA	206-244-5438	BU9AAE-- Tyler	TX	214-595-4217
AB5AA@-- Seattle	WA	206-248-2600	NW3AA@-- Dallas	TX	214-644-4781
MS2ABC-- Everett	WA	206-334-7394	AB3AA@-- Dallas	TX	214-661-2969
MS2AB4-- Everett	WA	206-334-9556	BU9AACT- Hawkins	TX	214-769-3036
CB2WA@C- Yelm	WA	206-458-3086	NW3AA@-- Dallas	TX	214-824-7455
OT2MAA-- Tocomo	WA	206-472-9884	AB3AA@-- Dallas	TX	214-931-3437
OT5AEA-- Seattle	WA	206-527-0897	AB3AA@-- Glenolden	PA	215-237-6908
PM5QAB-- Bellevue	WA	206-641-7340	CP3AJAC- Allentown	PA	215-398-3937
FR5AID-- Seattle	WA	206-723-3282	BU9AAE-G Langhorne	PA	215-855-3809
OT5AA@-- Seattle	WA	206-762-5141	FR3QBA-B Cleveland	OH	216-486-4176
MS5AIC-- Seattle	WA	206-763-8879	AB3AA@-- Akron	OH	216-644-1965
OT5AAD-- Bellevue	WA	206-822-3493	BU3ABE-O Akron	OH	216-645-0827
OA5XA#K- Unknown	WA	206-823-9357	BU3PAA-L Chesterland	OH	216-729-2769
AB5QABY- Renton	WA	206-935-9119	AB3AA@-- Akron	OH	216-745-7855
OA5AA@-- Seattle	WA	206-937-0444	PM3AABYL Akron	OH	216-867-7463
MS3ABC-- Manhattan	NY	212-245-4363	NW2KA@-- Decatur	IL	217-429-5541
CO3KEA-- New York City	NY	212-277-5851	BU2AAE-- Springfield	IL	217-529-1113
OA3XA@-G New York City	NY	212-362-1040	CP2BJAC- Valparaiso	IN	219-234-6717
CO3AAG-L Woodhaven	NY	212-441-3755	RN3AE#N- Greenbelt	MD	301-344-9156
CO3AAA-O Staten Island	NY	212-442-3874	PM3RAB-- Ellicott City	MD	301-465-3176
CB3AE@W- New York City	NY	212-787-5520	OG3AM@H- Silver Springs	MD	301-593-7033
AB3AAA-- New York City	NY	212-799-9577	CB3VAAC- Baltimore	MD	301-655-0393
OT3AAC-- New York City	NY	212-897-3392	AB3XA@-- Baltimore	MD	301-655-9439
CO3ABC-L Bronx	NY	212-933-9459	AB3NA@-- Columbia	MD	301-730-0922
CO2AAG-L Manhattan	NY	212-991-1664	CO3ABGXG Gaithersburg	MD	301-840-8588
AB3BA@-- New York City	NY	212-997-2186	CO3ABD-- Annapolis	MD	301-841-5371
PM3JA@-- New York City	NY	212-997-2488	CB3AEAC- Bel Air	MD	301-879-7841
			PS3AJ@-- Baltimore	MD	301-944-0399
			FR3AAC-O Denver	CO	303-341-0636
			FR3JAC-L Denver	CO	303-399-8858
			OG3AA@-- Denver	CO	303-423-5001

PUBLIC ACCESS SYSTEMS

RN3PE@-G Boulder	CO 303-444-7231	AB2RA@-- Columbia	MO 314-442-6502
CP3FJCC- Boulder	CO 303-499-9169	OT3AAA-- St. Louis	MO 314-645-1047
MS3AA@-- Colo Springs	CO 303-632-3391	NW3JAC-- St. Louis	MO#314-781-1308
CO3AAA-O Denver	CO 303-690-4566	NW2NA@-- New Hartford	NY 315-733-9139
AB3LA@-- Denver	CO 303-759-2625	FR2AAE-- Wichita	KS 316-682-2113
AB2DA@-- Miami	FL 305-261-3639	NW9AA@-- Shreveport	LA 318-222-8151
NW2AAC-- Miami	FL 305-274-3277	AB9AA@-- Lafayette	LA 318-232-7125
OT2AAB-B Deerfield Bch	FL 305-427-6300	FR2AAA-- Shreveport	LA 318-631-7107
AB2JA@-- Ft Lauderdale	FL 305-486-2983	CB4AA@-- Cedar Rapids	IA 319-364-0811
AB2AA@-- Ft Lauderdale	FL 305-524-2237	AB2AAA-- Dubuque	IA 319-557-9618
OT2JA@-- Ft Lauderdale	FL 305-525-1192	AB2AA@-- Lincoln	NE 402-423-8086
CO2AAA-- Orlando	FL 305-644-8327	AB3XA@-- Atlanta	GA 404-237-6846
AB2JA@-- West Palm Bch	FL 305-689-3234	AB3AA@-- Atlanta	GA 404-256-1549
FR2AA@-- Ft Lauderdale	FL 305-772-4444	CB3AA@-- Atlanta	GA 404-394-4220
CO2AA@-- Winter Garden	FL 305-877-2829	BU3XA@-- Fayetteville	GA 404-461-9686
AB2KA@-- Galesburg	IL 309-342-7178	OT3AA@J- Atlanta	GA 404-498-2392
AB2AA@-- Peoria	IL 309-692-6502	NW2AA@-- Athens	GA 404-548-5282
CP3DGAC- Lake Forest	IL 312-234-9257	NW2AA@-- Augusta	GA 404-733-3461
CP3GJAC- Chicago	IL 312-252-2136	OA3AA#K- Atlanta	GA 404-892-9627
NW3AAC-- Streamwood	IL 312-289-1198	RN3AJ@-- Woodstock	GA#404-926-4318
PM3AAC-- Lake Forest	IL 312-295-6926	OT2AAC-L Frederick	OK 405-335-7041
CP3JBAC- Palatine	IL 312-359-8080	AB2LA@-- Lawton	OK 405-353-2556
RN3AF@-- Palatine	IL 312-359-9450	NW3AA@-- San Jose	CA 408-227-5416
PM3AAA-- Chicago	IL 312-373-8057	BU3AAA-O San Jose	CA 408-241-0769
OA3AHAC- Chicago	IL 312-384-4762	PM9AAB-- Campbell	CA 408-370-0873
AB3NA@-- Naperville	IL 312-420-7995	PM3XA@-- Santa Clara	CA 408-554-9036
AB3AA@-- Chicago	IL 312-475-4884	CB3AAC-- Pittsburgh	PA 412-822-7176
AB3AA@-- Wheeling	IL 312-537-7063	CB3AE@-- Milwaukee	WI 414-241-8364
OT3AAB-G Wheeling	IL 312-541-6470	OG3AA@-- Milwaukee	WI 414-282-8118
CB3AJ@-- Chicago	IL#312-545-8086	AB2SA@-- Neenah	WI 414-727-3637
MS3AAA-L Chicago	IL 312-622-4442	CP3BJAC- Milwaukee	WI 414-774-2683
CP3GAAC- Franklin Park	IL 312-671-4992	OG3AA@-- Milwaukee	WI 414-873-7564
OT3AA@-G Chicago	IL 312-743-8176	CO3AAC-- Hayward	CA 415-278-6541
OA3AA@-- Hinsdale	IL 312-789-0499	AB3SA@-- Lafayette	CA 415-284-9524
CP3NAAC- Downers Grove	IL 312-852-1305	OG3AA@-- Menlo Park	CA 415-327-8876
AB3XA@-- Oak Brook	IL 312-941-9009	CB3AF@-- San Leandro	CA 415-357-1130
CP3FGAC- Mundelein	IL 312-949-6189	CP3QJAC- Mill Valley	CA 415-383-0473
CP3EGACB Hyde Park	IL 312-955-4493	CP3AJAC- Larkspur	CA 415-461-7726
OT3AAB-- Homewood	IL 312-957-3924	PM3AAB-- Palo Alto	CA 415-493-7691
AB3EA@-- Rogers Park	IL 312-973-2227	OA3XA#K- Berkeley	CA 415-526-7733
CB3AJ@-- Detroit	MI 313-288-0335	OA3XA#K- Hayward	CA 415-538-3580
FR3JA@B- Pontiac	MI 313-335-8456	NW3AA@-- San Francisco	CA 415-585-6334
AB3AA@-- Southfield	MI 313-357-1422	OG3AA#G- San Francisco	CA 415-647-9524
BU3AAA-- Mt. Clemens	MI 313-465-9531	CO3AAE-O Fremont	CA 415-651-4147
AB3NA@-- Detroit	MI 313-477-4471	CB3XA#G- Berkeley	CA 415-658-2919
OT3AB2-D Detroit	MI 313-533-0254	AB3AA@-- Fremont	CA 415-794-9314
CP3AHAC- Southfield	MI 313-559-5326	AB3AA#G- San Francisco	CA 415-821-1714
CP3WJAC- Detroit	MI 313-588-7054	OT3AA6-- Concord	CA 415-827-5549
CO3AAEA- Detroit	MI 313-823-4775	PM3AA@-- Portola Valley	CA 415-851-3453
CP3AJAC- Dearborn	MI 313-846-6127	AB3XA@-- San Francisco	CA 415-863-4703
OA3AAA-- St. Louis	MO 314-227-8495	AB3AA@-- Hayward	CA 415-881-5662
CP3FA@-- St. Louis	MO 314-291-1854	OA3XA#K- San Francisco	CA 415-928-0641
NW3LA@-- St. Louis	MO 314-432-7120	CP2JJAC- Toronto	ON CN 416-273-3011

		PUBLIC ACCESS SYSTEMS							
CO2BAC--	North York	ON	CN	416-667-9981	AC9AA@--	Scottsdale	AZ	602-998-9411	
CP2AJAC-	Mississauga	ON	CN	416-826-5395	NW2LA@--	Portsmouth	NH	603-436-3461	
AB2AA@--	Springfield	MO		417-862-7852	AB2XA@--	Unknown	NH	603-446-3930	
AB2XA@--	Bowling Green	OH		419-352-4477	OT9AAG--	Melford	NH	603-673-9476	
AB3XA@--	Toledo	OH		419-531-3845	FR2FAA--	Nashua	NH	603-882-5041	
AB3XA@--	Toledo	OH		419-865-1594	CO2AAG-L	Peterborough	NH	603-924-7920	
CP3BAAAC	Louisville	KY		502-245-7811	OA2AA@--	Vancouver B.C.	CN	604-437-7001	
AB3AAA--	Louisville	KY		502-426-2975	CP2BAAC-	Vancouver B.C.	CN	604-584-2543	
AB3AA@--	Louisville	KY		502-896-9624	MS2AIC-B	Surrey B.C.	CN	604-591-6975	
CO2AAG--	Portland	OR		503-231-7981	OA2AA@--	Vancouver B.C.	CN	604-682-6551	
AB2XA@--	Canby	OR		503-266-9687	CP2FAAC-	Johnson City	NY	607-797-6416	
FR2QA@--	Medford	OR		503-534-6883	OT2AA@--	Janesville	WI	608-752-7840	
CP9ABAC-	Portland	OR		503-621-3193	AB2JA@Y-	Turnersville	NJ	609-228-1149	
AB3AACAL	Portland	OR		503-641-8555	OG2SA@K-	Unknown	NJ	609-931-1619	
CB2AJ@--	Brevertton	OR		503-646-5510	AB2QAD--	Marlton	NJ	609-983-5970	
OG9AAG--	Unknown	OR		503-654-9352	NW3AA@--	Minneapolis	MN	612-561-6311	
OG2AA@--	Unknown	OR		503-657-6167	CB3AA@--	Minneapolis	MN	612-869-5780	
CB3AJ@--	Baton Rouge	LA		504-273-3116	PM3AAB--	Minneapolis	MN	612-929-6699	
OA3AAA-L	Baton Rouge	LA		504-291-1360	AB2XA@--	Ottawa	Ont	CN	613-725-2243
NW3AAA--	New Orleans	LA		504-454-6688	CB3AJAC-	Columbus	OH	614-272-2227	
OT3AAC-L	Baton Rouge	LA		504-926-0181	BU2AAA-O	Ironton	OH	614-532-6920	
AB2AA@--	Spokane	WA		509-456-8900	OT3AAA--	Nashville	TN	615-889-8284	
AB2AA@--	Spokane	WA		509-534-2419	AB2XA@--	Kalamazoo	MI	616-382-0101	
AB2AA@--	Yakima	WA		509-575-7704	AB3RA@--	Boston	MA	617-354-4682	
AB9XA@--	Austin	TX		512-261-6860	AC3AA@--	Boston	MA	617-491-0875	
FR3AAC-L	San Antonio	TX		512-340-6720	CB3AJ@--	Boston	MA	617-646-3610	
AB3JA@--	San Antonio	TX		512-341-5509	CB3NA@M-	Lawrence	MA	617-683-2119	
CB2AA@--	Corpus Christi	TX		512-855-1512	FR2AAA--	Westford	MA	617-692-3973	
NW2AAC--	Corpus Christi	TX		512-882-6569	OT2AAG--	Westford	MA	617-692-8121	
NW3FA@--	Dayton	OH		513-223-3672	PM3AAB--	Weymouth	MA	617-767-1303	
OT3AAC--	Cincinnati	OH		513-244-2983	OG2AA@--	Unknown	MA	617-770-2381	
PM3LA@--	Cincinnati	OH		513-671-2753	AB2AA@--	Worcester	MA	617-842-3736	
OG3XA@--	Hamilton	OH		513-863-7681	CP3JAAC-	Lexington	MA	617-862-0781	
NW4LA@--	Des Moines	IA		515-224-1995	FR3QA@--	Boston	MA	617-899-3540	
AB4JA@--	Ames	IA		515-294-8204	NW2AA@--	Granite City	IL	618-877-2904	
MS3AAD--	Jerico	NY		516-334-3134	AB2AACM-	Grand Forks	ND	701-777-4380	
CO3ABG-O	New York	NY		516-482-8491	FR5AAE-O	Las Vegas	NV	702-362-3609	
CB3AJC--	Long Island	NY		516-561-6590	AB4AAC--	McLean	VA	703-255-2192	
CO3ABE-O	Centereach	NY		516-588-5836	OG3AJ2R-	Falls Church	VA	703-379-0303	
AB3AAA--	Long Island	NY		516-698-4008	CB9AF@--	Falls Church	VA	703-532-9307	
CP7RBAC-	Long Island	NY		516-698-8619	FR2AAA--	Woodbridge	VA	703-670-5881	
CO2AIC--	Lansing	MI		517-339-3367	CB3AJB--	Washington	DC	703-734-1387	
CO3AABS-	Lansing	MI		517-353-5369	OT3AA@--	Alexandria	VA	703-960-2056	
FR9AAC--	Albany	NY		518-355-1826	OT3PA#F-	Fairfax	VA	703-978-7561	
OT9AA@--	Albany	NY		518-477-8917	NW3XA@--	Santa Rosa	CA	707-528-3462	
AB2CA@--	Starkville	MS		601-324-0793	PM3AAC--	Freeport	TX	713-233-7943	
OA2LEA--	Jackson	MS		601-362-8755	BU3ABE--	Houston	TX	713-331-2599	
FR9AAA--	Sierra Vista	AZ		602-458-3850	AB3SA@--	Houston	TX	713-654-0759	
CB3AA@--	Tucson	AZ		602-746-3956	NW2AA@--	College Stat'n	TX	713-693-3462	
AC3LA@--	Mesa	AZ		602-898-0891	NW2AAC--	Houston	TX	713-744-9359	
AB3LA@--	Phoenix	AZ		602-955-1486	CB3ABAA-	San Diego	CA	714-271-5615	
AC3AA@--	Phoenix	AZ		602-957-4428	PM3AA@--	San Diego	CA	714-295-8280	
AC3AA@--	Phoenix	AZ		602-996-9709	BU3AAE-O	Riverside	CA	714-359-3189	

PUBLIC ACCESS SYSTEMS

PM3AAB-B Santee	CA#714-443-8754	CO9EAA-- St Joseph	MO 816-279-6859
AB2XA@-- Laguna Niguel	CA 714-495-6458	FR3ABA-- Kansas City	MO#816-861-7040
OT3JAE-- Garden Grove	CA 714-530-4637	FR3JB@D- Kansas City	MO 816-931-9316
OT3AAA-- Garden Grove	CA 714-537-7913	NW2XA@-- Fort Worth	TX 817-261-4700
PM3AA@-- San Diego	CA 714-582-9557	FR2AAE-- Wichita Falls	TX 817-767-5847
CB3AA@-- San Diego	CA 714-698-2755	FR2AAA-- Wichita Falls	TX 817-855-3916
AB3XA@-- Sante Fe Spg	CA 714-739-0711	FR4AAA-- Memphis	TN 901-276-8196
PM3AA@-- Escondido	CA 714-746-0667	FR4AA@-- Memphis	TN 901-362-2222
PM3AABV- Anaheim	CA 714-772-8868	AB4AA@-- Memphis	TN 901-725-5691
NW3AA@-- Fontana	CA 714-823-1451	AB2JA@-- Ft Walton Bch	FL 904-243-1257
OT3GA@-- Fullerton	CA 714-871-6025	PM2XA@-- Anchorage	AK 907-344-8558
FR3AACSL Anaheim	CA 714-952-2110	PM3AAB-- Kansas City	KS 913-341-3502
AB3XA@-- Huntington Bch	CA 714-963-7222	CB3ABA-- Mission	KS 913-362-9583
CP3AEAC- Rochester	NY 716-244-9531	FR2AA@-- Leavenworth	KS 913-651-3744
OT2ABG-B Burlington	VT#802-862-7023	OT3QA@-- Kansas City	KS 913-676-3613
AB2AA@H- Essex Center	VT 802-879-4981	CP2JJAC- Petterson	NY 914-279-5693
FR2AAA-L North Augusta	SC 803-279-5392	BU9KAA - Poughkeepsie	NY 914-297-0665
CB2ABAC- Fort Mill	SC 803-547-6576	CP4FJAC- Bearsville	NY 914-679-6559
FR2AAC-- Charleston	SC 803-552-1612	OT9LA@P- Monroe	NY 914-782-7605
OG2JA@-- Columbia	SC*803-771-0922	CO9AA@-- Stony Point	NY 914-942-2638
RN3AE@-- Virginia Beach	VA 804-340-5246	AB2AA@-- El Paso	TX 915-533-6255
CB9AAAC- Grafton	VA 804-898-7493	AB2KA@-- El Paso	TX 915-533-7039
CP2BECCB Simi Valley	CA 805-527-9321	FR3AAA-- El Paso	TX 915-755-1000
RN2XA@-- Santa Barbara	CA 805-682-7876	CB9AJFQ- Sacramento	CA 916-393-4459
RN2AA@-G Santa Barbara	CA 805-964-4115	CB3AJAC- Sacramento	CA 916-483-8718
AB2XA@-- Amarillo	TX 806-355-5610	FR3AAA-- Tulsa	OK 918-747-1310
NW2NA@-- Pearl City	HI 808-488-7756		
OA2AA@-- Tampa	FL 813-251-4095		
OA2AA@-- Tampa	FL 813-257-2705		
OT2AAA-- Largo	FL 813-577-3095		
PM2QAA-- Tampa	FL 813-971-9515		
OT2KAA-- Thonotosassa	FL 813-986-3128		

Additional Information:

202-635-5730 - type/HELP WACS

213-881-6880 - logon/CAT

803-771-0922 - after bulletins you are
in NORTH STAR BASIC

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In the front of this manual you will find a registration card and two change of address cards. Please be sure to complete the card and mail it to the address on the front. The list that is generated from these cards will be used to mail the Enhancement and Patch notices (see 'PATCHES AND ENHANCEMENTS' sections). All registered owners will be notified as updates are made and distributed. The main routes of distribution will be through CONNECTION-80 BBS system, and MicroNET.

The author, Pete Roberts, has spent many, many hours developing UNITERM/80. Please do not thoughtlessly give away a copy of this software to anyone.

In order to serve your needs, we welcome suggestions as to enhancements that you desire. Please send them to the address listed in the 'PATCHES AND ENHANCEMENTS' section.

Thank you,

Thomas E. Vande-Stouwe
B.T. Enterprises